

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Original) An ultrasonic vibration tool comprising:

a block of substantially rectangular parallelepiped form, the block including a longitudinal side face, an end face formed as an output end face, and another end face opposite the output end face formed as an input end face, said input face having a central portion; and

an ultrasonic vibration source connected to said central portion of the input end face[[,]];

~~wherein a mass distribution is provided in a vicinity of the input end face to ensure a uniform amplitude distribution in the output end face~~

mass portions, said mass portions being formed on said longitudinal side face of said block, said mass portions being located at peripheries of said output and input end faces of said block;

at least three slits, said slits being formed between said mass portions for defining a plurality of elastic portions, said slits being spaced at a pitch which is equal to or less than a quarter of an oscillation wavelength;

protrusions, said protrusions protruding from said mass portions on said input face, said protrusion having a height equal to or less than a quarter of the oscillation wave length; and

said height of said protrusions increasing with distance from said central portion, said protrusions forming a mass distribution in said mass portion that provides a uniform amplitude distribution in said output end face.

2. (Cancelled)

3. (Original) The ultrasonic vibration tool according to claim 2, wherein

the protrusion is formed integrally with the block so as to correspond to each of the elastic portions.

4. (Original) The ultrasonic vibration tool according to claim 2, wherein

the protrusion is formed by fixing a separate protrusion forming member to the block so as to correspond to each of the elastic portions.

5. (Currently Amended) An ultrasonic vibration tool comprising:

a block of substantially rectangular parallelepiped form, the block including an end face formed as an output end face, and another end face opposite the output end face formed as an input end face;

an ultrasonic vibration source connected to the input end face,

wherein a mass distribution is provided in a vicinity of the input end face to ensure a uniform amplitude distribution in the output end face;

~~The ultrasonic vibration tool according to claim 1, wherein:~~

at a longitudinal side face of the block, peripheries of the output and input end faces each constitute a mass portion, and slits are formed between the mass portions at a pitch which is less than a half of an oscillation wavelength to obtain a plurality of elastic portions, and

the mass portion on a side of the input end face includes a recess.

6. (Original) The ultrasonic vibration tool according to claim 5, wherein

the recess is so formed as to correspond to each of the elastic portions.

7. (Cancelled)

8. (Currently Amended) An ultrasonic vibration tool comprising:

a block of substantially rectangular parallelepiped form, the block including an end face formed as an output end face, and another end face opposite the output end face formed as an input end face;

an ultrasonic vibration source connected to the input end face,

wherein a mass distribution is provided in a vicinity of the input end face to ensure a uniform amplitude distribution in the output end face;

~~The ultrasonic vibration tool according to claim 1,~~ wherein the ultrasonic vibration source is connected to a central portion of the input end face, and a recess whose depth decreases with distance from the central portion is formed in the input end face.

9. (Original) An ultrasonic vibration tool comprising:

a block of substantially rectangular parallelepiped form, the block including an end face formed as an output end face, and another end face opposite the output end face formed as an input end face; and

an ultrasonic vibration source connected to the input end face,

wherein peripheries of the output and input end faces each constitute a mass portion, and slits are formed between the mass portions at a pitch which is equal to or less than a quarter of an oscillation wavelength to obtain a plurality of elastic portions, and

the elastic portions have mutually different elastic coefficients so as to ensure a uniform amplitude distribution in the output end face.

10. (Original) The ultrasonic vibration tool according to claim 9, wherein the elastic coefficients of the elastic portions are varied by varying cross-sectional areas thereof.

11. (Original) The ultrasonic vibration tool according to claim 9, wherein the ultrasonic vibration source is connected to a central portion of the input end face, and the elastic coefficients of the elastic portions decrease with distance from the central portion.

12. (Currently Amended) A fixing device comprising:

the ultrasonic vibration tool as set forth in claim ~~1~~ or 9; and
a supporting member disposed opposite the output end face of the ultrasonic vibration tool,

wherein a fixation sheet is supplied between the output end face of the ultrasonic vibration tool and the supporting member.

13. (Original) The fixing device according to claim 12, further comprising an intermediate belt which is movable along the output end face of the ultrasonic vibration tool, wherein a fixation sheet is supplied between the supporting member and the intermediate belt.

14. (Currently Amended) A fixing device comprising:

the ultrasonic vibration tool as set forth in claim ~~1~~¹⁰9;

a heat-transfer rotary body disposed opposite the output end face of the ultrasonic vibration tool, the heat-transfer rotary body having a heat generating and transferring layer formed in an outer peripheral portion thereof; and

a supporting member disposed opposite the heat-transfer rotary body,

wherein a fixation sheet is supplied between the heat-transfer rotary body and the supporting member.

15. (Original) The fixing device according to claim 14, wherein

the heat-transfer rotary body is composed of a fixing roller which has a rubber layer formed in an outer peripheral portion thereof.

16. (Original) The fixing device according to claim 14, wherein

the heat-transfer rotary body is composed of a fixing belt which has a rubber layer formed in an outer peripheral portion thereof, the fixing belt being entrained about a supporting roller and a pressure-applying roller, the supporting roller being arranged opposite the output end face of the ultrasonic vibration tool, the pressure-applying roller being arranged opposite the supporting member.

17. (Currently Amended) A heating device comprising:

the ultrasonic vibration tool as set forth in claim ~~1~~^{or 9}; and
a supporting member disposed opposite the output end face of the ultrasonic vibration tool,

wherein a sheet being heated is supplied and discharged between the output end face of the ultrasonic vibration tool and the supporting member.

18. (New) A fixing device comprising:

the ultrasonic vibration tool as set forth in claim 1; and
a supporting member disposed opposite the output end face of the ultrasonic vibration tool,

wherein a fixation sheet is supplied between the output end face of the ultrasonic vibration tool and the supporting member.

19. (New) The fixing device according to claim 18, further comprising an intermediate belt which is movable along the output end face of the ultrasonic vibration tool, wherein a fixation sheet is supplied between the supporting member and the intermediate belt.

20. (New) A fixing device comprising:

the ultrasonic vibration tool as set forth in claim 1;

a heat-transfer rotary body disposed opposite the output end face of the ultrasonic vibration tool, the heat-transfer rotary body having a heat generating and transferring layer formed in an outer peripheral portion thereof; and

a supporting member disposed opposite the heat-transfer rotary body,

wherein a fixation sheet is supplied between the heat-transfer rotary body and the supporting member.

21. (New) The fixing device according to claim 20, wherein

the heat-transfer rotary body is composed of a fixing roller which has a rubber layer formed in an outer peripheral portion thereof.

22. (New) A heating device comprising:

the ultrasonic vibration tool as set forth in claim 1; and

a supporting member disposed opposite the output end face of the
ultrasonic vibration tool,

wherein a sheet being heated is supplied and discharged between the
output end face of the ultrasonic vibration tool and the supporting member.